

ABSTRACT

A diode laser for providing a high-energy coherent light beam suitably includes an array of laser diodes, each producing a laser beamlet. The beamlets are provided to a spatial light modulator (SLM) with an array of pixels, each pixel corresponding to a portion of the light beam. The phase variation across the light beam wavefront is monitored at a detector, and a feedback signal indicative of the phase variation is provided to control electronics. The control electronics process the feedback signal to modulate a local index of refraction within one or more pixels of the SLM to reduce the variation in phase across the beam wavefront. Because phase variations across the beam wavefront are reduced, relatively large diode arrays can be formulated, thereby resulting in relatively high powered diode lasers.